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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,431	11/21/2003	Kjell Kristoffersen	137682 (553-1053)	3956
45436	7590	05/28/2009		
DEAN D. SMALL THE SMALL PATENT LAW GROUP LLP 225 S. MERAMEC, STE. 725T ST. LOUIS, MO 63105			EXAMINER MEHTA, PARIKHA SOLANKI	
			ART UNIT 3737	PAPER NUMBER
			NOTIFICATION DATE 05/28/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docket@splglaw.com

### Office Action Summary

**Application No.**

10/719,431

**Applicant(s)**

KRISTOFFERSEN ET AL.

**Examiner**

PARIKHA S. MEHTA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 3/13/09
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The specification is objected to for the following minor informalities: the docket numbers listed under continuing data on the first page should be removed.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US Patent No. 6,050,945), hereinafter Peterson ('945), in view of Moore et al (US patent No. 6,511,432), hereinafter Moore ('432), both previously of record.

**Regarding claims 1 and 21-23**, Peterson ('945) teaches an ultrasound method and probe, the probe including a transmit section input, a transmit section output, receive signal blocking circuitry between the transmit section input and transmit section output, a receive section input, a receive section output, and transmit signal blocking circuitry between the receive input and output (col. 5 lines 8-20), the transmit signal blocking circuitry including a coupling capacitor capable of decoupling the receive section during operation of the transmit section.

Peterson ('945) does not teach a coupling capacitor capable of decoupling the receive section during operation of the transmit section. In the same field of endeavor, Moore ('432) teaches a blocking capacitor 60 is effective to shield the receive circuit processing elements from potentially damaging high voltage transmit signals (col. 2 lines 6-15, col. 4 lines 36-43). It would have been obvious to one of ordinary skill in the art to have included the blocking capacitors of Moore ('432) in the receive circuitry of Peterson ('945) and thereby achieve the claimed invention, in view of the teachings of Moore ('432).

**Regarding claims 10 and 11**, Peterson ('945) teaches a transducer array (col. 4 lines 53-54), a transmit section coupled through receive signal blocking circuitry to transmit transducer elements, a

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receive section input coupled to a multiplexed transducer element selected from the transmit transducer elements and adapted to be decoupled during operation of the transmit section (col. 5 lines 8-20), wherein the transmit section output drives the multiplexed transducer element during ultrasound beam transmission and where the receive section input receives a reception signal from the multiplexed transducer element during beam reception (col. 2 lines 50-57, col. 4 lines 31-34).

Peterson ('945) does not teach that the transmit section is also coupled through a coupling capacitor to transmit transducer elements. In the same field of endeavor, Moore ('432) teaches a blocking capacitor 60 that effectively shields between the transmit and reception circuitry (col. 2 lines 6-15, col. 4 lines 36-43). It would have been obvious to one of ordinary skill in the art to have coupled the transmit section and transducer elements of Peterson ('945) via the blocking capacitor of Moore ('432) and thereby achieve the claimed invention, in order to minimize crosstalk between the transmission and reception lines.

**Regarding claims 12 and 24,** Peterson ('945) teaches that the receive signal blocking circuitry comprises low level signal blocking circuitry (col. 5 lines 26-32).

**Regarding claims 4, 13 and 25,** Moore ('432) teaches clamping diodes 55 in the transmit blocking circuitry (Fig. 3).

**Regarding claims 5 and 26,** Moore ('432) teaches back-to-back diodes coupled to the transmit section input and output, as well as clamping diodes coupled to the transmit section input and output (Fig. 3; Examiner notes that, so long as two elements are part of the same circuit, they are effectively "coupled").

**Regarding claims 6, 7, 15 and 16,** Peterson ('945) teaches back-to-back diodes coupled between multiple transducer elements, wherein the diodes form a short circuit between the elements during transmit (col. 7 lines 7-10). The diodes of Peterson ('945) also form an open circuit during reception.

**Regarding claims 8 and 27,** Moore ('432) teaches clamping diodes 55 coupled to the receive section input and output, as well as back-to back and clamping diodes 55 coupled to the receive section input and output (col. 2 lines 14-15, Fig. 3).

**Regarding claim 9,** Peterson ('945) teaches a voltage step up circuit coupled between the transmit section input and transmit section output (col. 7 lines 50-54).

**Regarding claim 14,** Peterson ('945) teaches transmit signal blocking circuitry coupled to the receive section output as previously discussed for claim 1.

**Regarding claims 17 and 18,** the transmit array of Peterson ('945) comprises a 2 x 2 patch of transmit transducer elements (col. 4 lines 49-54).

**Regarding claim 19**, the multiplexed transducer element of Peterson ('945) is part of a two-dimensional array (col. 4 lines 49-50), which inherently must comprise at least a 2x2 array of four elements, from which three elements can be arbitrarily designated as a "triangular receive aperture comprised of selected array transducer elements". is included in a triangular receive aperture comprised of selected array transducer elements.

**Regarding claim 20**, neither Peterson ('945) nor Moore ('432) teach that the receive aperture comprises five sections having five, four, three, two and one element (s), respectively. Applicant has not disclosed that this size and arrangement of receive aperture sections solves a particular problem or presents a patentable advantage over the prior art. Furthermore, it has previously been held that merely changing the size and/or arrangement of known elements is obvious and unpatentable over the prior art (*In re Rose* , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966); *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)). Accordingly, it would have been obvious to one of ordinary skill in the art to have used a receive aperture having five sections of five, four, three, two and one element (s), respectively, in the system of Peterson ('945) as modified by Moore ('432), and thereby achieve the claimed invention, as such a modification requires nothing more than changing the size and arrangement of known receive aperture elements.

### ***Response to Arguments***

4. Applicant's arguments filed 13 March 2009 have been fully considered but are not persuasive. Applicant argues that the capacitor of Moore cannot be interpreted to constitute the claimed capacitor because the reference allegedly blocks the power signal from reaching the transducer, which is in purported contrast to the claimed capacitor adapted to decouple the receive section during operation of the transmit section (Remarks p. 9). Examiner respectfully directs Applicant's attention to Moore at col. 2 lines 6-15, as recited in the previous Office Action, wherein Moore explicitly states that diode bridges are useful for protecting receive circuitry from high transmit voltages during transmit operations (i.e., "decoupling the receive section during operation of the transmit section"). Moore then goes on to teach a diode bridge including the capacitor at col. 4 lines 31-34. Accordingly, one of ordinary skill in the art would be sufficiently motivated to arrange the reference diode bridge having a capacitor in such a manner as to facilitate decoupling of the receive section during a transmit event. As such, the reference meets the claims.

As Applicant's arguments are wholly unpersuasive for at least the foregoing reasons, the previous rejection is maintained and reiterated herein.

5. Applicant's amendments are sufficient to overcome the previous objections to the claims and title, which are hereby vacated accordingly.

6. Applicant has failed to overcome, either by amendment or argument, the previous objection to the specification for reciting docket numbers; accordingly, this objection is maintained and reiterated herein.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit  
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/Parikha S Mehta/

Examiner, Art Unit 3737